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SUPERVISION OF PUBLIC WATER SUPPLIES IN WARTIME*

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In the preparation of this paper, the discussion has been confined to the activities of public health agencies. The Subcommittee on Water Supply of the State Defense Council referred the problems of water quality and of sewage disposal to the State Department of Public Health. The Bureau of Sanitary Engineering has carried on a number of activities in the field of water supply and these are briefly described.

The foreword of Sanitary Engineering Bulletin No. 1, Medical Division, United States Office of Civilian Defense, makes this comment on the importance of public water supply:

> "No metropolitan area can long sustain community life or continue resistance against military force without an adequate supply of water. The latter has been demonstrated repeatedly throughout recorded history from the time of the fall of Hamaden to the Medes in 626 B. C. to the recent fall of Hong Kong immediately following failure of the public water supply. Singapore has shown again the vital necessity of water.
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> "The vulnerability of water distribution systems to aerial bombing has been clearly demonstrated time and again during the present war. Maintenance and restoration of service during and following periods of intense aerial activity have constituted major problems demanding a maximum effort. Interruptions of service as a result of enemy action constitute serious hazards to public safety and are of vital concern to the military effort."

The United States Public Health Service has exercised supervision over water supplies used on common carriers for many years. The State Department of Public Health has supervision over domestic water supplies in California through the provisions of the Sanitary Water Works Act. In an executive order dated May 19, 1942, providing for protection of essential facilities from sabotage and other destructive acts, the United States Public Health Service was made responsible for the development and execution of the "Facility Security Program" for domestic water supply.

Immediately following the attack on Pearl Harbor on December 7, 1941, the United States Public Health Service sent the following telegram to each of the State Health Officials:

> "In view of the present emergency, urge officials in charge of domestic water supplies to take immediate steps against sabotage by excluding all unauthorized persons and visitors from waterworks properties; to provide guards at danger points and places where sabotage may interrupt continuous maintenance of supply, and to step up chlorine dosages to maintain a residual sufficient to provide disinfecting action throughout the distribution system."

A letter dated December 9, 1941, elaborated on the above telegram.

In cooperation with the United States Public Health Service, the State Department of Public Health, through its Bureau of Sanitary Engineering, arranged for meetings of Health Department Officials and of waterworks men in the northern and southern parts of the State to discuss emergency protection and chlorination. A letter was also sent to water utilities in critical areas on the subject of water chlorination

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*Presented at the Health Officers' Department—League of California Cities, Los Angeles, California, September 22, 1942.

for emergencies. In response to requests from both waterworks and health officials, a series of first aid water chlorination schools was held throughout the State during January and February of 1942, at which emergency devices were demonstrated and the procedure for main sterilization was outlined.

Importance of Public Water Supply

The history of public health has thoroughly demonstrated the importance of a safe public water supply for domestic uses. It is not necessary to elaborate on this phase of the subject. In time of war emergency, it is particularly important that adequate facilities be provided for public water supply, for fire protection, and for wartime industries. These uses have developed so rapidly that in many cases it has not been practicable for the local health department or the water utility to exercise supervision over all phases of the installations. This is particularly true with reference to the possibility of cross-connections which will be discussed a little later.

Supplementary Emergency or Auxiliary Supplies

Experience in catastrophes in California and other sections of the United States, as well as experience under war conditions in Europe has demonstrated the need for emergency or auxiliary domestic water supplies. These may come from private wells or other potable water supplies pumped to the system, or it may be necessary to distribute the water in tank trucks, milk cans, or bottles. This has been done in many cases throughout the country. Each community should have detailed plans for such supplies. The assurance of a safe emergency supply, with provision for disinfection as needed, is a proper function of the local health department.

Emergency fire protection may be obtained through a separate system of water piping, by pumping an emergency supply to the domestic water system, or by pumping through fire hose direct to the fire from tanks, cisterns, swimming pools, creeks, etc. It is obvious that any program which contemplates the use of an emergency supply pumped to the domestic water system should be carefully studied in advance to assure adequate protection of the public health.

Public Health Considerations

The first consideration should be given to the normal water supply. In most cases in California, the normal supply has been carefully checked by the local health departments and by the State Health Department. Long experience has demonstrated the safety of the system. However, a few cases have already been reported where, owing to rapid growth of a community and a shortage of water supply, conditions inimicable to the public health have been brought to light. Each local health officer should make it a point to review the water supply or water supplies in his jurisdiction with waterworks officials to assure himself of the safety. Auxiliary supplies have been planned by waterworks, health officials, and civilian defense agencies in many parts of the State and in most cases a careful sanitary survey has been made before arrangements for use have been consumated. In areas having a number of contiguous populated areas, notably in Los Angeles County, it has been possible to arrange for intersystem connections which provide for use of water by adjoniing communities. These connections sometimes raise technical and political problems, but in the interest of the protection of the entire area, it is usually possible to overcome any objections. Where both supplies are potable, there is very little need for alarm on public health grounds.

Cross-connections which may permit contamination of the domestic water supply by a polluted supply present one of the major problems for both public health and waterworks officials. Because of the importance of fire protection, many industries have developed, or plan to develop emergency supplies from dangerous or doubtful sources and in some instances these have been so arranged that cross-connections with the public domestic supply exist. This matter received careful consideration by the State Board of Public Health, and on June 27, 1942, the Board adopted a resolution relative to the protection of water supplies against pollution due to cross-connections with auxiliary or emeregncy or fire fighting supplies, copies of which were sent to each health department and waterworks in the State.

Need for Supervision

The effect of the war emergency on all organizations in reducing the personnel available for inspection work has accentuated the normal need for supervision of public water supply. In communities which have experienced abnormal growth due to military activity or defense industries, an overburdened water utility or health department usually finds that it is impossible to keep up with all of the problems presented to it. The United States Public Health Service has attempted to coordinate the work throughout the country through the State departments of public health. In the State of California, which has experienced sudden development in many parts of the State, the need for State supervision was clearly evident months ago. The State Department of Public Health, therefore, requested additional personnel for the supervision of water supplies and early

this year emergency State funds were made available to employ men to do the necessary field work. These men had been termed Regional Water Works Advisers, and they have already visited all of the larger communities and those which have experienced the greatest growth during the war emergency. It has been the policy of the State to supplement local agencies and, with that in mind, an attempt had been made to review the problems in each area with health officials and representatives of the water utility, fire department, and civilian defense agencies. For convenience in reviewing the work, a check list of mutual aid has been prepared and the points discussed are recorded on this check list. They include maps of the system, record of valves, survey of interconnections and cross-connections, survey of auxiliary supplies and chlorination equipment, inventory of chlorine supplies and inventory for mutual aid, auxiliary power supplies, protection, and laboratory control. In addition to this check list, the organization of the local water department for defense is reviewed, with particular attention being paid to representation on the civilian defense committee; representation at the control center; expanding repair work; and investigation, finger printing and identification of personnel. All of this work has been done in cooperation with the local health department, and, as has been the policy of the State Department of Public Health in other phases of its work, the local health department has been urged to carry on as much follow-up work as it can with the personnel available. It is our plan to carry on this work in the future and we have found that any suggestions for more efficient development of local plans are welcomed by all parties concerned.

Sampling Public Water Supplies

Referring back again to the period immediately following the outbreak of the war with Japan, a number of local health departments started more frequent and more extensive sampling of public water supplies, largely as a result of consumer demand. We have encouraged frequent sanitary surveys in addition to this increased sampling schedule. One result of the increased sampling of public water supplies has been an increase in the number of requests received for analyses of private water supplies. This has been true in the State and we have been informed that many of the local health departments have had the same experience. The Bureau of Sanitary Engineering has recently prepared a form letter, which is sent out in answer to requests for private water analysis, explaining the limitations of department personnel and the limited value of water analysis in the absence of sanitary surveys of the supply. This form reply also discusses water-borne illness, the bacteriological examination of water, and chemical tests of water. The following quotations from this form reply may be of interest:

"BACTERIOLOGICAL EXAMINATION OF WATER

This test originated as a means of indicating or measuring sewage organisms in water and hence it only applies where there is reason to suspect sewage pollution. Hence, the test is quite useless without field knowledge. In that respect, it may be likened to some of the tests made by the physician to augment his clinical examination of the patient. He would seldom depend solely on the laboratory tests and ignore the clinical examination.

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"It should be apparent that it is of great importance to weigh physical possibilities of human sewage reaching the water in question. This is best done by the expert sanitary engineer, the sanitarian, or the health officer. Persons concerned with the question are strongly urged to discuss troubles and questions with the nearest health department."

I should like to suggest that just as an all-out effort is necessary to win the war, so a coordinated effort on the part of all parties concerned is necessary to adequately protect public supplies. This requires careful study of the problem in each locality by health departments, waterworks officials, fire departments, civilian defense officials, and in some instances representatives of industry. The Bureau of Sanitary Engineering stands ready to meet with the interested groups at any time and to give advice on any phase of the public water supply problem.

SALVAGE OPERATIONS

A large stock of food products, fire and water damaged in Vallejo, was sold to a salvage operator in Los Angeles and it is being salvaged under the supervision of the Bureau of Food and Drug Inspection.

A dealer who was permitted to conduct salvage operations was found selling quarantine material before release. A citation was issued and hearing held, with the result that quarantine orders will be respected hereafter.

Two thousand pounds of assorted meats and 5,000 cans of assorted food products, fire and water damaged, were ordered destroyed. The meat, however, was sold to a tallow works.

Six thousand five hundred cans of tuna from a fire-damaged stock were destroyed by opening cans and dumping. Five hundred cans of milk and 100 cans of string beans and other damaged products were also destroyed.

MORBIDITY*

Complete Reports for Certain Diseases Recorded for Week Ending October 17, 1942

Chickenpox

171 cases from the following counties: Alameda 6, Calaveras 3, Contra Costa 8, Fresno 2, Kern 7, Lassen 2, Los Angeles 23, Marin 1, Merced 7, Modoc 9, Monterey 1, Napa 1, Orange 13, Plumas 1, Riverside 11, Sacramento 3, San Diego 16, San Francisco 20, San Mateo 2, Santa Barbara 2, Santa Clara 10, Shasta 2, Solano 1, Sonoma 6, Stanislaus 9, Ventura 4, Yolo 1.

German Measles

31 cases from the following counties: Alameda 4, Fresno 1, Lassen 1, Los Angeles 7, Merced 1, Modoc 6, Monterey 1, Orange 1, San Diego 5, San Francisco 1, Santa Clara 2, Ventura 1.

Measles

37 cases from the following counties: Alameda 4, Los Angeles 13, Marin 3, Merced 1, Modoc 1, Sacramento 4, San Diego 1, San Francisco 6, Santa Clara 1, Sonoma 1, Stanislaus 1, Sutter 1.

Mumps

315 cases from the following counties: Alameda 49, Fresno 7, Imperial 3, Kern 8, Kings 3, Los Angeles 117, Madera 1, Modoc 3, Monterey 1, Orange 5, Plumas 9, Riverside 2, Sacramento 2, San Bernardino 1, San Diego 39, San Francisco 29, San Joaquin 2, San Mateo 2, Santa Clara 4, Santa Cruz 6, Shasta 5, Sonoma 7, Stanislaus 3, Sutter 1, Tehama 1, Ventura 1, Yolo 4.

Scarlet Fever

94 cases from the following counties: Alameda 4, Fresno 13, Kern 3, Lassen 7, Los Angeles 15, Madera 1, Modoc 1, Monterey 3, Orange 2, Riverside 2, Sacramento 7, San Bernardino 2, San Diego 10, San Francisco 7, San Joaquin 4, San Luis Obispo 2, San Mateo 1, Santa Barbara 2, Santa Clara 1, Sonoma 2, Sutter 4, Yuba 1.

Whooping Cough

182 cases from the following counties: Alameda 30, Amador 1, Contra Costa 1, Fresno 12, Kern 4, Los Angeles 65, Marin 2, Modoc 13, Orange 3, Riverside 2, San Diego 13, San Francisco 14, San Joaquin 2, Santa Clara 6, Santa Cruz 2, Sonoma 4, Stanislaus 1, Tehama 3, Tulare 1, Ventura 3.

Diphtheria

25 cases from the following counties: Fresno 2, Los Angeles 8, Marin 1, Monterey 1, Napa 1, Orange 1, Sacramento 3, San Bernardino 1, San Francisco 2, Santa Clara 1, Shasta 1, Siskiyou 1, Sonoma 2.

Epilepsy

43 cases from the following counties: Los Angeles 34, Sacramento 4, San Bernardino 1, San Francisco 2, Sonoma 2.

Dysentery (Bacillary)

8 cases from the following counties: Los Angeles 3, Merced 1, Monterey 1, San Francisco 1, Sonoma 2.

Influenza (Epidemic)

30 cases reported in the State.

Jaundice (Infectious)

5 cases from the following counties: Los Angeles 1, San Diego 3, Sutter 1.

Malaria

9 cases from the following counties: Riverside 1, Tulare 1, Yuba 1, California 6.**

Meningitis (Meningococcic)

2 cases from the following counties: Los Angeles 1, Sacramento 1.

Pneumonia (Infectious)

54 cases reported in the State.

Poliomyelitis (Acute Anterior)

16 cases from the following counties: Alameda 1, Fresno 1, Los Angeles 6, Monterey 1, San Bernardino 2, San Diego 1, San Luis Obispo 1, Santa Barbara 1, Siskyou 1, Yolo 1.

Rabies (Animal)

11 cases from the following counties: Los Angeles 10, San Diego 1.

Tetanus

5 cases from the following counties: Los Angeles 3, San Luis Obispo 1, Tulare 1.

Tularemia

3 cases from the following counties: Los Angeles 2, Riverside 1.

Typhoid Fever

7 cases from the following counties: Fresno 1, Los Angeles 2, Sacramento 2, Santa Clara 2.

Typhus Fever

One case from San Diego County.

Undulant Fever

5 cases from the following counties: Los Angeles 3, Nevada 1, Stanislaus 1.

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* Data regarding the other reportable diseases not listed herein, may be obtained upon request.

** Cases charged to "California" represent patients ill before entering the State or those who contracted their illness traveling about the State throughout the incubation period of the disease. These cases are not chargeable to any one locality.

PART-PAY EVENING VENEREAL CLINIC OPENS

Arrangements have been made by the Division of Venereal Diseases of the City and County of San Francisco Department of Public Health and the San Francisco Polyclinic and Post Graduate College for that clinic to open a part-pay venereal disease evening clinic to provide treatment for those war workers who can only be treated in the evening and who are unable to find treatment facilities after working hours. Many of these war workers are being referred by the local health department and some are patients who were formerly in the indigent class and who are now able to pay for treatment.

The opening of the part-pay evening clinic marks a definite forward step in venereal disease control and was approved at a recent meeting of the Executive Committee of the San Francisco County Medical Association. The clinic plans to pay physicians and nurses for their services and it is planned that the clinic should be self-supporting. Antiluetic drugs will be furnished by the local health department, and serologic examinations will be made by the department.

CHOPPED MEAT

Continued sampling of chopped meat in the warmer interior valleys of the State show that attempts are still made to improve the appearance of such products by adding sulphur dioxide. Eight violators of the law were brought to trial for this offense and fines aggregating $1,600 were paid. One violator was fined $700 because the offense was committed for the third time.

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